

CLAIMS

1. An artificial auditory tube consisting of a tubular body having a proximal end to be placed protruding out of the tympanic membrane within the external auditory canal and having a distal end to be inserted from the tympanic cavity into the eustachian tube and placed through the isthmus and facing the inside of the cartilaginous eustachian tube,

the distal end and the proximal end communicating with each other through an internal cavity extending in the axial direction of the tubular body,

the internal cavity opening to the outside through a first opening located at or close to the distal end, and

the external cross sectional dimension of the tubular body falling in the range of from 0.35 to 3.0 mm,

wherein the artificial auditory tube includes a second opening defined in the wall of the tubular body and positioned in the region ranging from 9 to 30 mm away from the distal end and communicating with the internal cavity of the tubular body.

2. The artificial auditory tube of claim 1, wherein the cross sectional dimension of the internal cavity of the tubular body is not less than 0.20 mm and, at least partly in a region, not more than 0.9 mm.

3. The artificial auditory tube of claim 1 or 2, wherein the artificial auditory tube includes a third opening defined in the wall of the tubular body and positioned in the region that is located between 1 and 16 mm away from the distal end and between 8 and 26 mm toward the distal end away from the second opening, the third opening communicating with the internal cavity of the tubular body.

4. The artificial auditory tube of one of claims 1 to 3, wherein the tubular body comprises a shaft portion that is a relatively thick tubular portion including a proximal end region to be placed protruding out of the tympanic membrane within the external auditory canal and a distal portion that is a relatively thin tubular portion extending forward in the axial direction from the shaft portion to be inserted from the tympanic cavity into the eustachian tube through the the tympanic opening of the eustachian tube to place the distal end through the isthmus facing the inside of the cartilaginous eustachian tube, and

the distal portion forms up to 4.20 mm from the distal end of the artificial auditory tube.

5. The artificial auditory tube of claim 4, wherein the distal portion stepwise or continuously decreases in the external cross sectional dimension thereof along the direction from the proximal end to the distal end thereof relative to the shaft portion.

6. The artificial auditory tube of claim 4 or 5, wherein the cross sectional dimension of the internal cavity of the shaft portion of the tubular body is expanded relative to the cross sectional dimension of the internal cavity of the distal portion of the tubular body.

7. The artificial auditory tube of one of claims 4 to 6, wherein the external cross sectional dimension of the artificial auditory tube falls in the range of from 0.35 to 1.7 mm at the position where the first opening is located.

8. The artificial auditory tube of one of claims 4 to 7, wherein the distal portion is made of two or more tubular portions differing in external cross sectional dimension and serially combined and aligned from the distal extremity of the shaft portion toward the distal end of the artificial auditory tube, and wherein the closer is a tubular portion to the distal end, the smaller is the external cross sectional dimension thereof.

9. The artificial auditory tube of one of claims 4 to 8, wherein the distal portion consists of a forefront tubular portion and an intermediate tubular portion located between the forefront tubular portion and the shaft portion.

10. The artificial auditory tube of claim 9, wherein the external cross sectional dimension of the intermediate tubular portion differs by at least 0.15 mm from that of the forefront tubular portion and also from that of the shaft portion.

11. The artificial auditory tube of claim 9 or 10, wherein the ratio in length of the forefront tubular portion to the intermediate tubular portion is 1:2 to 2:1.

12. The artificial auditory tube of one of claims 1 to 11, wherein the full length thereof is 20 to 70 mm.

13. The artificial auditory tube of one of claims 1 to 12 which is made of a flexible material.

14. The artificial auditory tube of one of claims 1 to 13, wherein the flexible material is a synthetic resin.